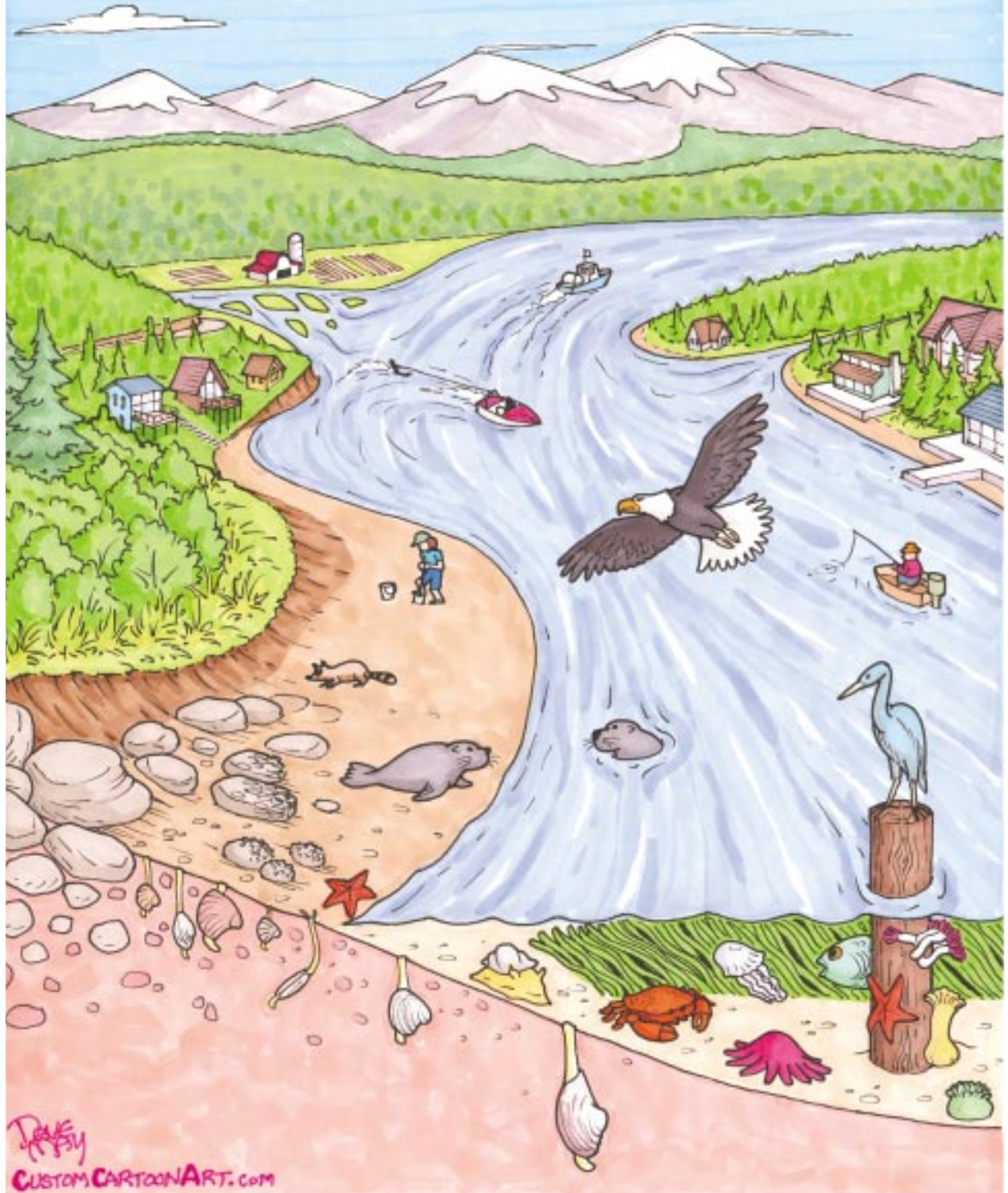


HOOD CANAL WATERSHED PLEDGE



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CUSTOM CARTOONART.COM



Welcome to the Hood Canal Watershed Pledge Program

The Hood Canal is a special place. Like many who live in or visit the region, you probably appreciate this spectacular natural environment and its abundant natural resources.

We all want to keep this place special.

In our watershed, rain runoff from roads, homes, and businesses can be a significant source of pollution. Runoff from storm events and even lawn watering can carry fertilizers and pesticides, heavy metals, petroleum products, pet and livestock waste, and other pollutants into Hood Canal. While we cannot control the rain, we can control what is carried in runoff from our yards, gardens, and driveways. When it comes to water quality, small actions can make a big difference across the entire watershed.

Here is a chance for you to help ensure a healthy watershed! Please take a few minutes to learn more about preventing pollution in our watershed. You may find that you have already incorporated many of these water-friendly practices into your daily life. We hope that you will also find other ideas and actions that you are willing to take and even share with others. As our thanks for your participation in the program, we will give you a beautiful handcrafted recycled glass sun-catcher with the design pictured below. You will also receive more in-depth information on topics covered in this booklet and periodic updates that will chart our progress.

Tell us what you are already doing to protect our watershed, and what new things you will pledge to try. Many of these simple steps will also save you time and money. All you have to do is fill out the detachable card at the back of this booklet and either hand it back to one of our volunteers or mail it to us. You may be contacted in the fall for a simple follow-up.

**Join with your neighbors in pledging to protect our watershed.
Together we can make a difference in keeping Hood Canal a special place!**





Please join us in a pledge to take care of Hood Canal.

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**Map and original watercolors copyright Dee Molenaar.
The Burley-based mountaineer, author, artist, cartographer, and retired USGS geologist
generously gave us permission to reproduce his work for this project.**

Natural History of the Hood Canal Region

The Hood Canal is a glacier-carved fjord-like basin more than 60 miles long that forms the westernmost part of the Puget Sound Basin. The Canal includes portions of Mason, Jefferson, and Kitsap counties as well as the Skokomish and Port Gamble S'Klallam Tribal reservations.

The watershed is an area of great geologic and topographic contrasts. The sharp peaks and jagged ridges of the Olympic Mountains make up the western edge of the basin, with the mountains rising directly from sea level to the watershed's highest point, Mt. Deception, at 7788 ft. The southern and eastern portions of the watershed are made up of materials left by immense glaciers as they receded nearly 13,000 years ago. Within the Hood Canal watershed's 500 square miles are rugged mountains, quiet beaches, roaring rivers, lush forests, and an abundance of wildlife.

Shellfish, Fish, and Other Critters

The Hood Canal watershed offers incredible habitat—shelter, food, spawning grounds, and nurseries—for numerous species of finfish, shellfish, waterfowl, and other wildlife. Hood Canal is ideally suited for growing shellfish such as Pacific oysters, manila clams, littleneck clams, and geoducks. It is also home to tasty spotted shrimp and Dungeness crabs. Numerous species of bottom fish are also found in Hood Canal,



including several species of shark and rockfish, plus a plethora of tiny grunts and gunnels living among the rocks and kelp.

The watershed supports five species of migratory salmon: pink (humpback), chum (dog), coho (silver), chinook (king), and sockeye (red) salmon, as well as steelhead and cutthroat trout. All seven of these species are classified as salmon species.

The marine life in and around Hood Canal represents a wonderful natural resource, an economic resource, and a source of tasty food. Over thirty species of crab and shrimp can be found, ranging from the impressive box crab living at deep depths to little shore crabs found under rocks on the beach—much to the delight of inquiring children!

Hood Canal's waters are home to the world's largest species of octopus, barnacles, and chiton, and some of the smallest snails. Many beautiful species of sea slugs, called nudibranchs, move gracefully in and out of the iridescent green, brown, and red kelp under the water. Many small invertebrate species, as well as juvenile fish, hide and feed in thick beds of eel grass growing in shallow waters. Eelgrass habitat, which is highly productive, is threatened in many places.



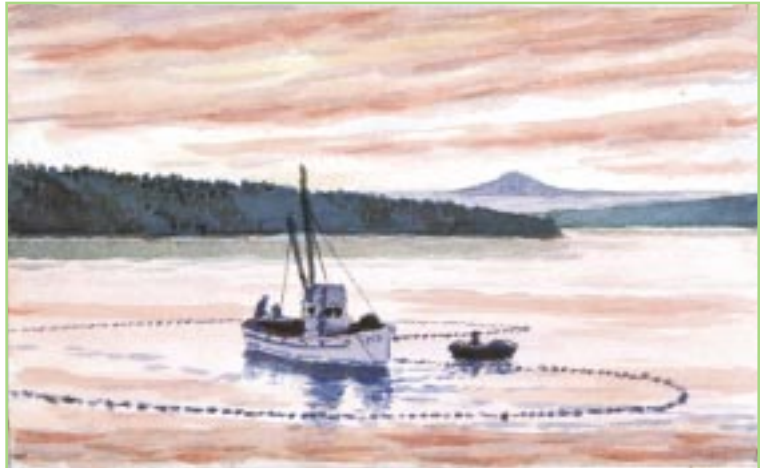
Did You Know?

About 80 percent of the animal species living in Hood Canal are so small they cannot be seen by the naked eye? Most of them are the food upon which larger species feed, playing a vital role in the food chain.

When warm weather begins, most invertebrates in Hood Canal cast their young, in larval form, into the water at about the same time. This creates a rich and teeming soup of life as each species tries to reproduce successfully during the short summer season.

One only needs to walk the beach to witness colorful sea stars and sand dollars exposed at low tide. Other species of sea stars, sea cucumbers, and sea urchins remain out of sight in the deeper water.

Wonders abound in this watershed that includes over a dozen major rivers. Green sturgeon have even been found in the Union River. The Olympic National Park and a variety of other parks in the region offer endless hiking trails and incredible views. The stretch of US Highway 101 between Brinnon and Quilcene alone boasts thirteen campgrounds, seven lakes, three major rivers, and innumerable boating, fishing, trail-riding, cross-country skiing, kayaking, bird-watching, and sight-seeing opportunities.



Over the years, fish, shellfish, and timber resources in the area have helped shape much of the region's social, historic, and cultural heritage. As the earliest inhabitants of the region, Native Americans occupied the watershed for thousands of years, and the area's abundant natural resources provided a bountiful harvest. Today the region's economic health is intertwined with its natural resources, and recreation and tourism-related industries play a prominent role.

While shellfish populations remain healthy, harvesting opportunities are sometimes threatened by beach closures due to high levels of bacterial contamination. Bacterial contamination occurs primarily by way of runoff carrying livestock and pet waste, or through seepage from failing septic systems. With everyone's cooperation, these problems can be solved.

The impact of human activities plays a vital role in the quality of the Hood Canal watershed, both today and into the future. We have the opportunity to work toward conserving this incredible place for generations to come. By joining the pledge, you will be positively contributing toward the health of Hood Canal.



Cultural History of the Skokomish and Port Gamble S’Kallam Tribes

Skokomish Tribe

What is known today as the Skokomish Tribe was originally composed of Twana Indians, a Salishan people whose aboriginal territory encompassed the Hood Canal watershed. There were nine Twana communities, with the largest known as the Skokomish, or “big river people.” The Twana subsisted on hunting, fishing, and gathering activities. They practiced a nomadic lifestyle during warmer weather and resettled at more permanent sites during the winter. The tribe’s first recorded direct contact with European culture came in 1792 and resulted in a devastating smallpox epidemic that took the lives of many. Many Twana descendants live on the Skokomish Reservation, and have become known as the Skokomish Tribal Nation.

Today, many tribal members exercise treaty rights by harvesting various shellfish and fish. The Skokomish have purchased property for development and resource enhancement, as well as for tribal housing. The Skokomish Tribe operates their own businesses, including a tribal salmon hatchery, a gaming facility, and a gas/convenience store. Tribal members also operate private businesses, including tribal arts galleries and shops, a restaurant, seasonal fireworks stands, and seafood outlets. Traditional cultural activities include canoe building, plant medicine cultivation, language use, ceremonies, weaving, and basketry. Skokomish tradition and heritage continue as a way of life on the reservation.

Port Gamble S’Klallam

The Port Gamble S’Klallam Reservation is located in the northern part of the Kitsap peninsula on the east side of Port Gamble Bay. The tribal community is a modern homeland for the tribe. It is self-governing, with its own police, fire, and EMS services. The tribal government operates its own departments and systems, including housing and planning, social service, medical and dental, fishing and natural resources, education and culture,

court, and public works. Additionally, the tribe runs a number of businesses; the largest is their casino, restaurant, and smokeshop store.

Before European exploration and settlement forever changed their way of life, the S'Klallam people exercised a socially complex way of life with each other, other tribes, and the landscape. They lived in harmony with their environment and the natural resources that surrounded them. Now the Port Gamble S'Klallam people operate in the modern world, yet retain their spiritual and native heritage rooted in their long and honorable past.

Water Quality in Hood Canal

The waters of Hood Canal are vulnerable to many types of human sources of pollution. These impacts are intensified by the Canal's unique shape and slow flushing rates. Hood Canal's dissolved oxygen concentrations are at their lowest in recorded history. In recent years the low dissolved oxygen condition has become more widespread, spreading northward.

In parts of Hood Canal, some of the deeper water creatures have been stressed to the point of widespread death from lack of dissolved oxygen in the deep waters. Just as people depend on oxygen to breathe, marine life, at all depths, depends on dissolved oxygen. Many natural factors contribute to the low dissolved oxygen problem: slow water circulation and mixing, quality of incoming ocean and river water, weather patterns, high growth of algae, loadings of carbon and nitrogen, and changes in marine life composition.



Photo by Peter Wiant

Hood Canal's reduced exchange of water with the rest of Puget Sound and the Straits is the result of the Canal's long length, deep water, and a shallow sill at its northern entrance that constricts water movement in and out of the Canal. Water takes much longer to cycle through Hood Canal than through other areas of Puget Sound. Hood Canal also develops highly stratified layers of dense, colder, and saltier water at the bottom, with relatively lighter fresh water forming a top layer.

As surface water temperatures rise over the spring and summer, different density layers are created. This prevents mixing between the more oxygen-rich surface water and the deeper waters. The deep waters can then become deficient in oxygen as bacteria and other organisms living on the bottom use oxygen in order to breathe and to process decaying materials.

In the winter, water conditions generally change enough to break down some of the stratification and allow the layers to mix. This creates an "oxygen recharge" of the deeper water. Turbulent weather, cooler temperatures, and less sunlight all contribute to the change. However, in Hood Canal's eastern toe, the low oxygen condition often continues to exist throughout the year, mostly due to the slower rate of water exchange.

Many of the human factors that contribute to the reduced amount of dissolved oxygen in the Canal are related to an increase in nutrients, especially nitrogen, moving into the Canal. Sources of additional nutrients and decaying materials include stormwater runoff, septic systems, individual landscape practices, lawn care activities, livestock and pet wastes, fertilizer runoff, certain commercial fishing practices, and boat waste. When these nutrients enter the water, they provide food for algae, causing large blooms. Initially the algae contribute more oxygen, but this benefit is small and occurs near the surface of the water. Eventually the algae die, sinking to the bottom where they are consumed by various organisms. Unfortunately, these

organisms use oxygen in the process of breaking down the algae. The result is a low level of dissolved oxygen, possible fish kills, and an ecosystem that is chronically stressed.

How You Impact the Watershed

Understanding how we impact the watershed is the first step toward protecting water quality and our natural resources. Although each home or business may only be contributing minor amounts of pollution, the cumulative effect adds up quickly. Low levels of dissolved oxygen in Hood Canal took many years to become apparent and it may take a long time for the watershed to recover. However, with your participation in such programs as the Hood Canal Watershed Pledge, Simple Techniques, or Shore Stewards (if you are a shoreline or streamside homeowner), we hope to lessen our impact on this beautiful place today.



Taking Care of Your Septic System: "Septic Sense"

Many homes in the Hood Canal watershed use septic systems (also called on-site sewage systems). A well-designed and maintained septic system can provide years of reliable service, but poorly placed or neglected systems pose a serious threat to the quality of water in the canal. When systems fail, property damage and water contamination can occur. Water pooling up in the yard, foul odors, stains in the soils near the drainfield, and problems with backed up drains in your home all are indications of system failure. If you notice any of these signs, please contact your local health district or a septic system professional for advice. They can also help locate your system and its reserve area, and help you determine your system's daily capacity.

I PLEDGE TO:

- A Keep my septic system in top working order by having it inspected regularly (every 3-5 years*) and get my tank pumped when needed to prevent solids from entering the drainfield.
*Larger families may need to have their tanks inspected and pumped more frequently.
- B Use less toxic cleaning products. Products that have the word "Caution" written on the label are less toxic than labels stating "Warning" or "Danger." Also, check out the resource section for contact information on obtaining *Creative Cleaning: Back to Basics*, which includes simple recipes for non-toxic household cleaners. Toxic cleaning products that enter your septic system can cause problems.
- C Spread out my washing machine and dishwasher loads throughout the week to prevent overloading my septic system, which can cause solid materials to pass into the drainfield.



- D Use a drain snake to clear clogs instead of chemical drain openers. Dispose of hazardous waste, medicine, or toxic products at a hazardous waste collection center. Chemical drain openers and bleach kill beneficial bacteria that help keep the system functioning properly.
- E Avoid driving, parking, burning brush piles, or grazing livestock over my drainfield or reserve area. These actions can affect how well a septic system functions and shorten its life. For help in locating your septic system drainfield, call your county health department or a septic system professional.
- F Talk to a septic system professional about installing a system that removes nitrogen along with bacteria when building or replacing my septic system.
- G Reduce the use of my garbage disposal to prevent undigested food waste from adding additional nutrients to my septic system. Instead, try composting your food waste. Call Washington Sea Grant for more information at 360-432-3054 and, for a limited time (through Fall 2005), receive a free drain screen from their Simple Techniques program.



RESOURCES

For more tips on how to care for your system, visit the WSU Mason County Extension on-site sewage website <http://mason.wsu.edu/Onsites.htm>.

Your local Environmental Health Department (see page 15)

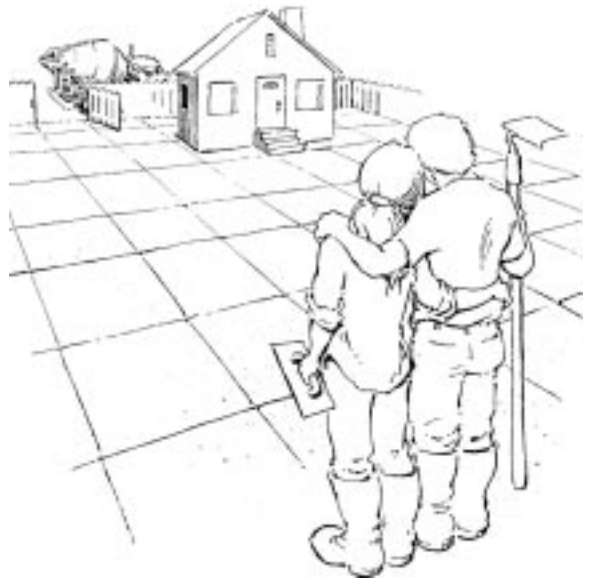
EB 1758 *Creative Cleaning: Back to Basics* is available from your local Extension office. You can view it online by entering EB1758 in the search bar at <http://pubs.wsu.edu>. Phone orders: 1-800-723-1763

Managing Stormwater Runoff

As more roads, driveways, and homes replace natural vegetation, the amount of water runoff increases. Stormwater runoff can pick up pollutants like fertilizers, pesticides, oils, and pet waste and deliver them to Hood Canal. Uncontrolled runoff from home sites can also cause erosion and trigger damaging landslides. The effects of development can be minimized through some of these thoughtful actions on your part.

I PLEDGE TO:

- A Use a commercial car wash where soapy water is recycled or wash my car or boat on the lawn (NOT on the pavement or boat ramps, or over my septic drainfield) using a mild, phosphate-free soap.
- B Keep my motorized vehicles properly maintained, as regular maintenance helps to prevent oil and fuel leaks and reduce emissions. These materials can severely affect aquatic life and cause oil slicks. Did you know that just one quart of motor oil can contaminate two million gallons of drinking water?
- C Avoid or minimize clearing trees, shrubs, and native plants, and replant whenever possible. Plants filter water and help it soak into the ground.



D Direct my roof, driveway, and patio runoff into planted areas so that it can soak into the ground. Be sure to direct it away from your on-site sewage system drainfield. *NOTE: If your home is situated on a bluff or slope DO NOT divert runoff without first contacting a professional geotechnical engineer. A list may be available through your county's planning department (see Resources).*

E Whenever possible, use porous surfaces such as bricks, flagstone, sand, gravel, or permeable pavements for driveways, patios, and paths, as these materials allow water absorption.



RESOURCES

For a list of resources on managing runoff, go to the Puget Sound Action Team's online publication
http://www.psat.wa.gov/Publications/LID_studies/LID_approaches.htm

Kitsap County's Surface and Stormwater Management Website:
<http://www.kitsapgov.com/sswm/default.htm>

Your local Environmental Health Department (see page 15)

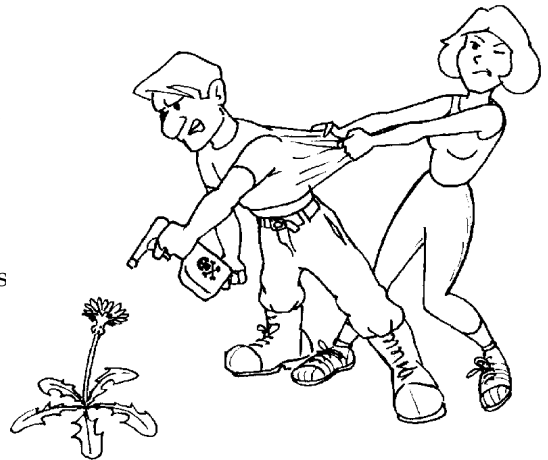
Your local Community Development office

Canal Friendly Landscaping

There are many ways to keep lawns and yards looking great without spending a fortune on harmful chemicals or wasting water. Incorporating native plants into your landscape will reduce maintenance, as these plants are already adapted to our area's soils and climate.

I PLEDGE TO:

- A Keep pet feces out of the canal by properly disposing of dog and cat waste. Double-bag pet waste and put it in the trash. Pet waste pollutes water and is a threat to human health, because it contains bacteria, viruses, and parasites. It can also cause algae blooms and contaminate shellfish beds.
- B Water my lawn just once a week or allow it to go dormant. If I choose to keep it green I will water with one inch of water per week (measuring with a rain gauge or empty can). This practice encourages deeper root growth and eliminates the need for more frequent watering. Over-watering your lawn can wash fertilizers, pesticides, and pet waste into the Canal.
- C Try to minimize fertilizer use. When fertilizer is used, choose organic or time-release fertilizers with low levels of phosphorus and nitrogen, and follow the directions on the label. Keep in mind that September is the best time to fertilize. Make sure there are no rainstorms in the weather forecast. Fertilizers contain large amounts of nitrogen and phosphorus, which are the primary nutrients for algae growth.



- D Leave my lawn clippings on the lawn, compost them, or add them as mulch to garden beds rather than dump them into Hood Canal. As yard waste decomposes, it uses up oxygen needed by aquatic life.
- E Cover livestock waste and pile it away from all water sources on my property. Your local Conservation District can provide you free technical assistance and will work with property owners to develop a waste management plan.
- F Plant a native plant buffer strip at the base of hills, around property drainages, and next to the water's edge. This will help filter pollutants, reduce erosion, discourage geese and ducks, and provide shade and insects for young fish.



RESOURCES

Your local Conservation District office (see page 15)

Washington State University Master Gardener Program

You may also want to check out the following sites:

Your Yard and Water Quality: Simple Things Gardeners Can Do to Prevent Water Contamination

<http://cru.cahe.wsu.edu/CEPublications/eb1744/eb1744.html>

Gardening in Western Washington with Native Plants: Identifying, Propagating and Landscaping

<http://gardening.wsu.edu/NWnative/>



Septic Sense



Stormwater Runoff



Canal Friendly Landscaping

Environmental Health Department
 360-385-9444 Jefferson Co.
 360-337-5235 Kitsap Co.
<http://www.kitsapcountyhealth.com>
 360-427-9670 x 352 Mason Co.



Community Development/County Planners
 360-379-4450 Jefferson Co.
 360-337-7181 Kitsap Co.
 360-427-9670 x 282 Mason Co.



Washington State University Extension
 Master Gardener Program
<http://mastergardener.wsu.edu>
Back to Basics and other publications
<http://pubs.wsu.edu/>
 360-379-5610 x 200 Jefferson Co.
 Master Gardeners: Ext 211
 360-337-7157 Kitsap Co.
 360-427-9670 x 396 Mason Co.



County Conservation Districts
 360-385-4105 Jefferson Co.
 360-337-7171 Kitsap Co.
 360-427-9436 Mason Co.



Washington Sea Grant Program
 University of Washington
 360-337-7170 Kitsap Co.
 360-432-3054 Mason Co.
<http://www.wsg.washington.edu>



Hood Canal Salmon Enhancement Group
 360-275-3575
<http://www.hcseg.com>



WSU Extension Shore Stewards Program
 360-275-3575

Hood Canal Dissolved Oxygen Program
<http://www.hoodcanal.washington.edu>



Septic Sense



Stormwater Runoff



Canal Friendly Landscaping

Gardening in Western Washington
with Native Plants: Identifying,
Propagating and Landscaping
<http://gardening.wsu.edu/NWnative/>

Washington Department of Ecology
360-407-6000
<http://www.ecy.wa.gov/>

Washington Department of Fish and Wildlife
Fish and Shellfish Information
360-902-2700
<http://wdfw.wa.gov/fishcorn.htm>

Hood Canal Coordinating Council
<http://www.wa.gov/hccc/>

Call 1-800-OILS-911 if you see a change in fish
behavior, algae blooms, an oil spill, or dead fish
in or near Hood Canal.

Puget Sound Action Team
800-54-SOUND
<http://www.psat.wa.gov>



Marine Biotoxin Hotline
800-562-5632
<http://www.doh.wa.gov/ehp/sf/biotoxin.htm>

Neighbors of Hood Canal
<http://www.hoodcanalwatershed.org>

The Hood Canal Watershed Pledge is adapted from the Whatcom
County Watershed Pledge, Department of Ecology, The City of
Bellingham, and RE-Sources.



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College of Agricultural, Human, and Natural Resource Sciences

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Pledge Card

Septic Sense (Pages 9–10)

I ALREADY A B C D E F G

I PLEDGE TO TRY A B C D E F G

Stormwater Run-off (Pages 11–12)

I ALREADY A B C D E

I PLEDGE TO TRY A B C D E

Canal-Friendly Landscaping (Pages 13–14)

I ALREADY A B C D E F

I PLEDGE TO TRY A B C D E F

Also consider participating, volunteering, and keeping informed on issues in your watershed. The Neighbors of Hood Canal has a great website for resources on volunteer opportunities and upcoming events at www.hoodcanalwatershed.org.



Help spread these ideas by sharing them with your neighbors!

NOTES

Take the Watershed Pledge!

Now that you have read through this booklet, we hope you can put some of these ideas into practice around your home. We invite you to take the pledge, fill out the card below, and either hand it back to one of our volunteers or mail it in to us. We hope that the recycled glass sun-catcher will remind you of how special Hood Canal is and that we all have a role in keeping it healthy.

Join your neighbors and help improve water quality in Hood Canal!

Now that you have read through this booklet, you can see how easy it is to help protect our environment. To take the pledge, fill out the card below.

1. Fold down the card so that it is visible as you flip through the book.
2. Go back to each of the three sections and mark the things that you are already doing in the first row.
3. Decide which changes you will make and mark your new practices in the second row.
4. Fill in your name and address, then tear off the perforated layer and either hand it back to a volunteer or drop it in the mail. You'll hang onto the booklet and have a record of what you pledged to try.
5. After we receive your pledge you will receive a follow-up phone call for evaluation and also a hand-crafted recycled glass sun-catcher for display in your home as a reminder of your commitment!



Pledge Card

Septic Sense (Pages 9–10)

I ALREADY A B C D E F G

I PLEDGE TO TRY A B C D E F G

Stormwater Run-off (Pages 11–12)

I ALREADY A B C D E

I PLEDGE TO TRY A B C D E

Canal-Friendly Landscaping (Pages 13–14)

I ALREADY A B C D E F

I PLEDGE TO TRY A B C D E F

Also consider participating, volunteering, and keeping informed on issues in your watershed. The Neighbors of Hood Canal has a great website for resources on volunteer opportunities and upcoming events at: www.hoodcanalwatershed.org.



Help spread these ideas by sharing them with your neighbors!

Name _____

Address _____

Phone _____ Email _____

Signature _____

WASHINGTON STATE UNIVERSITY



MASON COUNTY EXTENSION

11840 N. Hwy 101

Shelton, WA 98584

360-427-9670 Ext. 396

N. Mason: 360-275-4467 Ext. 396